

Molecular Physics

USSR

UDC 669. 355

TABADZE, F.N., Academician of the Georgian SSR Academy of Sciences, SURMAVA,  
G.G., and SVANIDZE, K.G.,

"Determination of the Diffusion Characteristics of Zinc Into Copper According  
to the Initial Stage of Whisker Thickening"

Tbilisi, Soobshcheniya Akademii Nauk Gruzinskoy SSR, Vol 60, No 1, Oct 70,  
pp 53-56

Abstract: Determination has been made of the diffusion coefficient of zinc  
into the following copper materials of the indicated approximate average  
diameters" thin whiskers, 5 microns; thick whiskers, 20 microns; deformed  
whiskers, 6 microns; thin Ulitovskiy microwire, 6 microns; and thick micro-  
wire, 20 microns, at temperatures of 600, 650, and 700 degrees C. Determina-  
tion was based on measuring the initial stage of whisker thickening as the  
zinc diffused from the surface. A known solution to the one-dimensional  
problem of diffusion from a source with constant concentration was used, ex-  
ploiting the fact that the cylindrical shape of the specimen has no signi-  
ficance for the initial stage of diffusion when the average path of diffusion  
is much smaller than the specimen. The diffusion coefficient of the zinc  
in whiskers was 1-2 orders lower than in thick copper wire. Also measured  
were the structural factor, which was 6-7 orders lower in whiskers, and  
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TABADZE, F. N., et al, Soobshcheniya Akademii Nauk Gruzinskoy SSR, Vol 60,  
No 1, Oct 70, pp 53-56

the energy of activation, which was 2-3 times lower. These coefficients, based on thickening in the initial stage, coincide with previous findings on data obtained in processing data at areas close to saturation for thin materials (both whiskers and wire), but the differences were great in the case of thicker materials. Coefficients averaged about 3 times higher at 700 degrees than at 600 degrees, except for thick microwire, for which the difference was 10 times as great. The coincidence of the energy of activation diffusion in thin whiskers with the previously reported energy of displacement of vacancies in copper confirms findings elsewhere that new vacancies do not form during diffusion in whisker crystals.

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## BRIEF REPORTS

Karl Marx  
Mao Tse-tung  
Academy  
of Sciences  
JFK - STAS  
2. May 71

## SCIENTIFIC COLLABORATION OF WEST GERMANY AND THE USSR

Article by Gen. D. Gubkin, Moscow, Vestnik Akademii Nauk SSSR, No. 40, No. 12, December 1970, p. 10.

An agreement on scientific collaboration between the US and the German Scientific Research Society in Bonn, West Germany, was signed on 28 September 1970 in Moscow by the chief scientist of the USSR and the president of the US USSR Academy of Sciences, Professor U. Sverdrup. This agreement was concluded in accordance with the principles of the two countries' records in negotiations with two scientific-technological and cultural relations.

The partner of the US is the American Scientific Research Society — the AS, which has a network of 35 independent organizations which was formed in 1920. The AS is a technical control. Its members are 70 universities, 50 research institutes and 100 scientific research societies, foundations of 52 research institutions.

The German Scientific Research Society, in accordance with its statutes and functions, is called upon to conduct research work of both sides to cooperate specifically with various institutions of West Germany, to establish scientific relations with foreign universities,

no less than with our own research organizations, the Society directs scientific groups (laboratories) in all fields of science which have been organized according to scientific standards. Scientific groups have been organized in the universities and institutes of the two

Planck Society of Assistance to Science. In addition, the German Scientific Research Society recently created a number of institutes which play an auxiliary role in investigations and study; questions of supplying the Institutes of West Germany with materials, preparations and equipment etc; also questions of the gathering and processing of information.

Rather active contacts have already been established between the AS USSR and research institutions of West Germany. Each year the AS USSR receives from 100 to 400 scientists of West Germany and in turn sends Soviet scientists to that country to present lectures and reports, do joint work in its laboratories and institutes, and participate in international and national congresses and symposia.

The signed agreement provides for an increase in the volume or exchange of specialists in various areas of science and also the possibility of establishing direct contacts between individual institutes of the AS USSR and West Germany.

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UDC 51

TABAKMAN, I. B., RIZAYEV, S. R.

"Operative Control in the Coal Section with the Application of Situation Forecasting"

V sb. Prom. kibernetika (Industrial Cybernetics -- collection of works), Kiev, 1971, pp 51-61 (from RZh-Kibernetika, No 9, Sep 72, Abstract No 9V552)

No abstract

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USSR

UDC 541.136

BARANOV, V. I., VDOVICHENKO, N. V., VLASOV, V. M., IVANOV, A. M., MUCHNIK,  
G. F., RUBASHOV, I. B., and TABAKMAN, L. S., Moscow

"Fuel Cells With ion Exchange Membranes. Development and Investigation"

Moscow, Elektrokhimiya, Vol 8, No 5, May 72, pp 694-698

**Abstract:** Fuel cells are described based on cation exchange resin membranes washed free of unbound acid. The use of solid electrolyte imparts certain specific properties to all physical processes occurring in the fuel cells, such as localization of elementary physical acts responsible for current generation. Current generation on the surface of the membrane could not possibly produce the total generated power, so that the electrode inside the membrane must have been contributing substantially to current generation. Several assumptions are made concerning this problem, and a conclusion is reached that current is generated by a thin layer of a catalyst inside the membrane partially filled with water. Two methods are used for water removal from the electrode surface -- thermal and hydrodynamic -- to ensure proper performance of the unit. Thermal method is more versatile but requires a more

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ARANOV, V. I., et al, Elektrokhimiya, Vol 8, No 5, May 72, pp 694-698  
complex equipment. The principal problem in this system concerns uniformity  
of the removal of water. Both types of current generators are described,  
pointing out the areas where development is still needed, mainly in synthesis  
of new materials for membranes.

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USSR

UDC: 621.374.5(088.8)

DYUKOV, L. V., TABAKOV, G. A., BARANOV, A. N., TIKHONOVICH, V. V.

"A Device for Correcting the Flat Section of a Pulse"

USSR Author's Certificate No 266829, filed 3 June 69, published 2 July 70  
(from RZh-Radiotekhnika, No 5, May 71, Abstract No 5G302 P)

Translation: This Author's Certificate introduces a device for correcting the flat section of a power modulator pulse. The device consists of a controllable resistance (e. g. a lamp) connected in series or parallel with the load, an amplifier in a feedback circuit, a comparison element, and a reference voltage source. To reduce losses in the regulator and ensure zero-lag action of the device, the comparison element and reference voltage source are made in the form of a capacitor and electronic switch in a series circuit which is connected in parallel with the load resistance. The common point between capacitor and switch is connected to the high-resistance input of the feedback amplifier.

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USSR

UDC 615.285.7.015.4:616.1/.4-091-092.9

BONASHEVSKAYA, T. I., and TABAKOVA, S. A., Institute of General and Communal Hygiene imeni A. N. Sysin, Academy of Medical Sciences USSR, Moscow

"Morphological Changes in the Organs of White Rats Produced by Inhalation of Chlorophos in Microconcentrations"

Moscow, Farmakologiya i Toksikologiya, Vol 35, No 2, Mar/Apr 72, pp 240-241

**Abstract:** A 3-month long exposure to air containing 0.2 mg of chlorophos per  $m^3$  causes marked tissue pathology in rats. In the lungs, capillaries in inter-alveolar septa are enlarged and alveolar epithelium is edematous. In the liver, lymphoid tissue in the periphery of lobules is enlarged, blood cells are present in perivascular spaces, and bile duct epithelium is hypertrophied. In the kidneys, glomeruli are deformed, Bowman's capsules are filled with proteins, the nuclei of tubular cells are pyknotic and the cytoplasm dense and vacuolized, and desquamated epithelial cells and hyaline casts are present in the tubular lumen. In the thyroid gland, the parenchyma is separated into islands made of 2-4 big follicles or a larger number of small follicles. The primary cause of these pathological changes is increased vascular permeability. After inhalation of air containing 1 mg of chlorophos per  $m^3$ , all the morphological alterations become more pronounced. However, no pathology is observed if chlorophos concentration is 0.02 mg per  $m^3$  of air.

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USSR

UDC 615.285.7.015.4:611-013

GOFMEKLER, V. A., and TABAKOVA, S. A. Institute of General and Communal  
Hygiene imeni A. N. Sysin, Academy of Medical Sciences USSR, Moscow

"The Effect of Chlorophos on Embryogenesis in Rats"

Moscow, Farmakologiya i Toksikologiya, Vol 33, No 6, Nov/Dec 70, pp 735-737

**Abstract:** The embryotoxic effect of chlorophos was studied in experiments on pregnant female rats subjected to uninterrupted inhalation intoxication with chlorophos in concentrations of 0.005, 0.02, 0.2, and 9 mg/m<sup>3</sup> during the entire gestation period (20 days). Chlorophos exerted a distinct embryotoxic effect in all concentrations applied. This effect was manifested by external and internal anomalies of the embryos during their development, changes in the weight of embryo organs and of the embryo as a whole, deviations from normal of the ascorbic acid content and nucleic acids in tissues of female rats and of fetuses, and histopathological and histochemical changes in the placenta.

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USSR

PETRAKOVSKIY, G. A., PETROV, A. S., TABARIN, V. A.

"Study of an Yttrium Garnet as an Element of a Reactive Modulation Amplifier"

Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol 34, No 6, 1970, pp 1,194-  
1,196

Abstract: A linear analysis is made of a ferrite-based reactive modulation amplifier by a simultaneous solution of the Maxwell and the Landau-Lifshits equations using the Krylov-Bogolyubov method. An experimental investigation was also made of an experimental model of a reactive modulation video amplifier based on a yttrium garnet. Stable amplification of not less than 30 db was obtained in the band from 1.5 to 4.5 megahertz. Investigation of the noise spectrum of the ferrite confirmed the low-noise factor of the ferrite amplifier.

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USSR

MORALEV, S. A., TABARNYY, V. G., MOLCHANOV, A. A., LESHCHENKO, YU. I., and LOG-  
VINENKO, N. P.

UDC 621.396.6-181.48

"A System for the Machine Design of BIS (Large Scale Integrated Circuits) Based  
on MOS-Transistors"

Elektron. prom-st'. Nauchn-tekhn. sb. (Electronics Industry. Collected Scientific-  
Technical Articles), 1972, No 2, pp 44-49 (from RZh-Radiotekhnika, No 11, Nov 72,  
Abstract No 11 B225)

Translation: The proposed machine design system makes it possible to automate the basic stages of the design and development of MOS type, large integrated circuits. This includes the following: from the statement of the technical specifications in the form of functional circuits with an inventory of the circuit-technical and technological limitations to the representation of the topology of the microcircuit in the form of a geometric drawing, along with the corresponding code on perforated tape. The information recorded on the perforated tape is used for the automated production of photopatterns. Resume.

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USSR

UDC: 621.372.061

KALNIBOLOTSKIY, Yu. M., TABARNYY, V. G., SHEVELENKO, Zh. Sh.

"Component Degeneration in Analysis of Electronic Circuits by Means of Equations of Variables of State"

Kiev, Radioelektronika, Vol 15, No 7, Jul 72, pp 911-914

Abstract: The authors consider the structural properties of electronic circuits which prevent the occurrence of component degeneration in the process of deriving the equations of variables of state.

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USSR

TABARNYY, V. G., KALNIBOLOTSKIY, Yu. M., SHEVELENKO, Zh. Sh.  
UDC: 519.1

"Concerning a Method of Constructing a Normal Tree of a Circuit  
Graph"

Teor. elektrotehnika. Resp. mezhved. nauch.-tekhn. sb. (Theoretical Electronics. Republic Interdepartmental Scientific and Technical Collection), 1972, vyp. 14, pp 91-97 (from RZh-Kibernetika, No 5, May 73, abstract No 5V537 by the authors)

Translation: On the basis of methods of structural numbers a method is proposed for constructing normal trees of a structural circuit graph, and a description is given of their investigation for the purpose of optimum (in the given sense) construction of a system of differential equations of an electronic circuit in normal form.

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USSR

UDC 621.396--181.4:001.24

TABARNYY, V. G. and KOROLEV, Yu. V.

"Designing Electronic Circuits With Distributed Parameters"

Kiev, Poluprovodnikovaya tekhnika i mikroelektronika, No. 5, 1971,  
pp 27-33

**Abstract:** Proposed in this article is a method of analysis of thin film and integrated circuits in which characteristic parameters of the y, z and other types are used for parts of the circuit having a microstructure with distributed parameters. The method suggests putting the y parameters in the form of bilinear functions of the complex frequency p. The advantage of this approach is the possibility of using the analysis method for linear electronic circuits with lumped parameters. Such microstructures as resistor-dielectric-metal and resistor-dielectric-resistor are considered, and the circuit of a selective amplifier is analyzed by way of example of the application of the proposed method. The authors find that their results for this last circuit differ from those obtained by earlier writers (Volkov, V. M. and Popov, V. P., Radiotekhnika, 1967, 22, 1, 27-31) and explain the reason for the difference. They are connected with the Semiconductor Institute, Ukrainian Academy of Sciences.

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USSR

Public Health, Hygiene and Sanitation

UDC 616.916.1-097.3-056.78(47-25)

ANDZHAPARIDZE, O. G., CHERVONSKIY, G. I., DECAYATSKOVA, R. G., and TABAROV-SKAYA, I. S., Moscow Scientific Research Institute of Virus Preparations, Sanitary Epidemiological Station, Zhdanovskiy Rayon, Moscow

"Formation of Collective Immunity To Rubella in the Population of Moscow"  
Moscow, Voprosy Virusologii, No 1, Jan/Feb 71, pp 71-76

**Abstract:** Data and results obtained in a study of hemagglutination inhibition by rubella virus collected from blood sera of 1,237 Moscow residents ranging in age from 1 to 54 years are presented. Indices included the frequency of occurrence and levels of antibodies for different age groups and the disease incidence. Several of the requisite features of collective immunity were found which distinguish the Moscow population from other rubella foci. It was found that in the age group of 1-3 years, 16% of the subjects had rubella antibodies. The corresponding percentages for other age groups were as follows: 6-7 years, 65%; 12-13 years, 72%; 18-22 years, 95% of the subjects. Children of 3-7 years of age come down most frequently with the disease. This is a particular feature of the data on the Moscow population. Also, in Moscow, the highest rate of incidence is at an earlier age than in 1/2

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ANDZHAPARIDZE, O. G., et al., Voprosy Virusologii, No 1, Jan/Feb 71, pp 71-  
76

populations of other localities, with those attending nursery or elementary schools making up the bulk of patients. It was found also that men are more likely to be afflicted by the disease than are women. The percentage of seronegative subjects among pregnant women was 5.6%, which was lower than similar figures for Europe and America. It is pointed out that the epidemic situation in other regions of the country may be different because of different geographic conditions and a different population density.

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USSR

UAC 621.315.591

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TABATADZE, D. G., BOL'SHUN, Ye. V., and BYASNIKOV, I. A., Scientific Research Physico Chemical Institute imeni L. Ya. Karpov, Moscow, State Committee for Chemistry.

"Adsorption of Vapors of Noble Metals on a Semiconductor Film of Zinc Oxide"

Moscow, Zhurnal Fizicheskoy Khimii, Vol 44, No 7, Jul 70, pp 1864-1866

Abstract: Au, Pt, and Ag were adsorbed on a semiconductor ZnO film at 120° from the vapor phase on heating electrically wires of these metals to 820, 1250, and 820° in an evacuated glass vessel which also contained the ZnO film. The electric conductivity of ZnO increased considerably as a result of adsorption of atoms of the noble metals, but dropped after evaporation of these metals was stopped. The decrease in conductivity was observed even at temperatures > 20°. It was not due to desorption of the noble metal atoms from the ZnO surface; this was established in experiments in which Pt containing  $^{197}\text{Pt}$  was used. Apparently aggregation of noble metal atoms on the surface of ZnO took place after migration of the atoms on this surface.

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*Hematology*

USSR

UDC 617-001.36-07:616.151.5-07

PLESHAKOV, V. T., TSYBULYAK, G. N., KOTSYUBINSKIY, N. N., and TABATADZE, K. G.,  
Clinic of Military Field Surgery, Hospital Surgical Clinic, and Faculty  
Therapeutic Clinic, Military Medical Academy imeni S. M. Kirov, Leningrad

"The Coagulation and Fibrinolytic Systems of the Blood in Traumatic Shock"

Leningrad, Vestnik Khirurgii imeni I. I. Grekova, Vol 106, No 6, Jun 71,  
pp 94-98

**Abstract:** Observations on 28 patients with shock of the 13 degree due to severe trauma showed that the concentration of fibrinogen in the blood decreased, while the fibrinolytic activity increased markedly and the time of coagulation increased to some extent. Experiments were conducted on dogs in which changes in coagulation and fibrinolysis upon acute blood loss, as a result of pain trauma combined with blood loss, and under the effect of blood loss or trauma and blood loss followed by reverse transfusion of the lost blood were studied. Blood loss as such reduced fibrinolysis in the initial stage. In a later stage, the concentration of fibrinogen decreased because of partial intravascular coagulation. The time of coagulation decreased. As a result of trauma combined with blood loss, hypofibrinogenemia developed because of increased fibrinolysis-intravascular coagulation did not contribute to this 1/2

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PLESHAKOV, V. T., et al., Vestnik Khirurgii imeni I. I. Grekova, Vol 106,  
No 6, Jun 71, pp 94-98

effect. Blood transfusion accelerated fibrinolysis and increased the coagulation time, with these effects becoming more pronounced as the rate of blood transfusion was increased. The experimental results on the effects of trauma combined with blood loss did not explain the increase in the coagulation time observed on patients; the coagulation time regularly decreased in the experiments (the latter is characteristic for trauma and is due to release into the blood stream of products of tissue degradation as well as to a reflex reaction to pain). The acceleration of fibrinolysis in patients also did not correspond to the results of experiments on the effects of a blood loss in which the fibrinolytic activity was inhibited. Evidently, the increase in the coagulation time and the acceleration of fibrinolysis that were observed on patients were due to blood transfusion.

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USSR

UDC 616.24-002.5-053.9

TABIDZE, Sh. A. and SHENGELIYA, I. A., Republic Tuberculosis Research Institute,  
Ministry of Health, Georgian SSR, Tbilisi

"Epidemiology and Clinical Picture of Pulmonary Tuberculosis in Persons Over  
Fifty"

Moscow, Problemy Tuberkuleza, No 12, 1971, pp 1-6

**Abstract:** While tuberculosis morbidity and mortality have sharply declined in the general Soviet population, both rates are increasing among those over fifty. This is due to aging of the population and increased life-span of tuberculosis patients, on the one hand, and to the difficulties of controlling the disease in the elderly, on the other, because of the peculiar clinical course, frequency of intercurrent diseases and resulting diagnostic difficulties, limited possibilities of drug and surgical treatment, and unwillingness of many old people to undergo systematic treatment. Mass chest X-ray campaigns often skip the elderly because most of them are not part of organized groups. The incidence of the disease among males is more than twice as high as among females of the same age, destructive forms and intercurrent diseases are four times as common, and the results of therapy are less favorable. Since the threshold of tuberculin sensitivity in the elderly is low, the true incidence of the disease is much higher  
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USSR

TABIDZE, Sh. A. and SHENGEVYA, I. A., Problemy Tuberkuleza, No 12, 1971, pp  
1-6

than that indicated by the results of the standard test (intradermal injection of 5 TU of tuberculin). There is no relationship between the degree of tuberculin sensitivity and severity of the course of the disease.

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1/2 028

UNCLASSIFIED

PROCESSING DATE--04DEC70

TITLE--EFFECT OF COMPLEX SATURATION WITH BORON AND COPPER ON THE STRENGTH  
CHARACTERISTICS AND WEAR RESISTANCE OF CARBON STEEL -U-

AUTHOR-(05)-POKHMURSKY, V.I., VAGULA, R.G., GRIBOVSKY, YA.S., ZAMIKHOVSKY,

V.S., TABINSKY, K.P.

COUNTRY OF INFO--USSR

SOURCE--FIZ.-KHM. MEKHAN. MAT., 1970, 6,(2), 18-21

DATE PUBLISHED-----70

SUBJECT AREAS--MATERIALS

TOPIC TAGS--WEAR RESISTANCE, COPPER ALLOY, BORIDE, CARBON STEEL, IMPACT  
STRENGTH, FATIGUE STRENGTH

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--3003/0213

STEP NO--UR/0369/70/006/002/0018/0021

CIRC ACCESSION NO--AP0129469

UNCLASSIFIED

2/2 028

CIRC ACCESSION NO--AP0129469

UNCLASSIFIED

PROCESSING DATE--04DEC70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF COMPLEX SURFACE SATURATION WITH B AND CU ON THE UTS, YS, IMPACT STRENGTH, FATIGUE RESISTANCE, DUCTILITY, AND WEAR RESISTANCE OF C STEELS WAS STUDIED. AFTER SATURATION WITH B AND CU THE DUCTILITY OF THE STEEL ROSE, THE FATIGUE STRENGTH REMAINED AT THE SAME LEVEL AS THAT OF UNTREATED SAMPLES, WHILE THE WEAR RESISTANCE EQUALLED THAT OF B SATURATED MATERIAL. THE EFFECT ON THE OTHER CHARACTERISTICS WAS LESS SPECIFIC.

UNCLASSIFIED

"APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R002203220016-3

TITLE--~~UNCLASSIFIED~~ EPIDEMIOLOGY OF INTESTINAL COLI INFECTION IN YOUNG CHILDREN -U-  
PROCESSING DATE--27NOV70

AUTHOR--(05)-BELIKOVA ALDAKOVA, V.D., TABOLIN, V.A., BYCHENKO, V.D.,  
DESHCHEKINA, M.F., KARASEVA, K.G.

COUNTRY OF INFO--USSR  
SOURCE--ZHURNAL MIKROBIOLOGII, EPIDEMIOLOGII I IMMUNOBIOLOGII, 1970, NR  
6, PP 9-14  
DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--PEDIATRICS, INFECTIOUS DISEASE, DIGESTIVE SYSTEM DISEASE,  
SMALL INTESTINE, BACTERIAL DISEASE, EPIDEMIOLOGY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/0358

CIRC ACCESSION NO--AP0126114

UNCLASSIFIED

STEP NO--UR/0016/70/000/006/0009/0014

APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R002203220016-3"

2/2 020

CIRC ACCESSION NO--AP0126114

UNCLASSIFIED

PROCESSING DATE--27NOV70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE MATERIAL OBTAINED DEMONSTRATED THAT IN CHILDREN UNDER TWO YEARS OF AGE INTESTINAL COLI INFECTION CONSTITUTED ONLY 5-6 PERCENT OF THE WHOLE SUM TOTAL OF ACUTE INTESTINAL DISEASES. CLINICALLY MANIFEST FORMS USUALLY OCCURRED IN ENFEEBLED CHILDREN; IN HEALTHY CHILDREN THIS INFECTION WAS MOSTLY EXPRESSED IN THE CARRIER STATE. TO ASCERTAIN THE ROLE OF THE DOSE OF THE CAUSATIVE AGENT IN THE EPIDEMIOLOGY OF INTESTINAL COLI INFECTION THE AUTHORS ANALYZED COMPARATIVE BY THE EPIDEMIOLOGICAL VALUE OF VARIOUS WAYS OF TRANSMISSION OF THE INFECTIVE AGENT. FOOD FACTOR WHICH PROVIDED PENETRATION OF A GREATER DOSE OF THE MICROBE IN TO THE ORGANISM PROVED TO PLAY A LEADING ROLE. IN CONCLUSION IT WAS SHOWN THAT OF THE CARDINAL IMPORTANCE IN THE PROPHYLAXIS OF INTESTINAL COLI INFECTION SHOULD BE THE MAINTENANCE OF HIGH SANITATION STANDARD IN CHILDREN'S COLLECTIVE BODIES, PARTICULARLY IN THE GROUPS OF ENFEEBLED CHILDREN.

FACILITY: I. MOSKOVSKIY MEDITSINSKIY INSTITUT IM. SECHENDOVA.  
FACILITY: II. MOSKOVSKIY MEDITSINSKIY INSTITUT, DETSKAYA KLINICHESKAYA BOL'NITSA IM. FILATOVA.

UNCLASSIFIED

USSR

ORLOV, I.N., TABORKO, V.I.

UDC 621.385.82(088.8)

"Electroluminescent Image Converter"

USSR Author's Certificate No 263761, Filed 31 May 68, published 24 June 70  
(from RZh-Elektronika i yeye primeneniye, No 3, March 1971, Abstract No  
38338P)

Translation: An electroluminescent image converter is proposed, in which, with the object of increasing the contrast, a layer of transparent dielectric is applied between the photoconductor layer and the electrode, and on the other side of the glass-metal disk with anisotropic conductivity a layer of material with nonlinear resistance is applied. N.S.

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FUELS AND RELATED EQUIPMENT

Source: JPRS # 1125  
11 Feb 74

(3)

# PETROLEUM PROSPECTING

Sakhalin

"Sakhalin Island Survey Institutes for Oil and Gas Fields"

[Article by N. S. Kostylev, Director of the Research Institute of the USSR Ministry of Geology, Geological Administration, and Geology, 11, November 1973, pp. 9-13]. Moscow, Sovzhetizdat, 1974.

In Tselin, Oil and Gas are produced in the Sakhalin basin from developing great economic value to the Soviet Far East, only on Sakhalin.

Thirty-nine gas and oil fields — 13 of them gas — have now been explored on Sakhalin. The fields — 13 of them gas — have now been mainly Cretaceous geological structure.

per Miocene, 18 percent, of which 82 percent are associated with Miocene or the Middle Miocene are confined primarily to the collections of gas by cross-section of less than 2,000 meters. There are major prospects for accumulating the charge in total thickness and Middle Miocene formations for oil-bearing oil and gas indicate that they may be oil- or gas-bearing, whose thicknesses vary from 5 to 7 kilometers.

However, the greatest potential for substantial growth of Upper Miocene and deep drilling studies and deep drilling performed on Sakhalin is linked with its shelf, promising for oil and gas prospecting. This shelf's coastline is viewed as a primary site for prospecting. This permit the shelf to be recently authorized by a broad buildup of terrigenous sediments through which makes up material.

1/3 018

UNCLASSIFIED

PROCESSING DATE--0906170

TITLE—GENERATION OF MICROSEISMIC OSCILLATIONS IN THE SEA OF OKHOTSK AND  
MOVEMENT OF A SOURCE OF EXCITATION OF MICROSEISMS ACROSS THE KAMCHATKA

AUTHOR—(02)—TABULEVICH, V.N., PANCHISHKO, YU.N.

COUNTRY OF INFO—USSR, PACIFIC OCEAN

SOURCE—MOSCOW, IZVESTIYA AKADEMII NAUK SSSR, FIZIKA ZEMLI, NO 3, 1970, pp  
75-78

DATE PUBLISHED—70

SUBJECT AREAS—EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS—MICROSEISM, OSCILLATION, SEA FLOOR, EARTHQUAKE, EXPLOSION,  
WAVE PROPAGATION, SEISMOLOGIC STATION

CONTROL MARKING—NO RESTRICTIONS

DOCUMENT CLASS—UNCLASSIFIED

PROXY REEL/FRAME—1991/0723

CIRC ACCESSION NO—AP0110453

UNCLASSIFIED

STEP NO—UR/0387/70/000/003/0075/0078

018  
CIRC ACCESSION NO--AP0110453  
ABSTRACT/EXTRACT--(U) GP-0-

UNCLASSIFIED

PROCESSING DATE--09OCT70

ABSTRACT. DETERMINATION OF THE SOURCE OF MICROSEISMS OF THE FIRST KIND AND THE TRACING OF PERIODIC OSCILLATIONS PROPAGATING IN THE EARTH MAKE IT POSSIBLE TO OBTAIN NEW INFORMATION DIFFERENT FROM THAT OBTAINED FROM OBSERVATION OF WAVES PROPAGATING FROM EARTHQUAKES AND EXPLOSIONS. THE GENERATION OF MICROSEISMS IS POSSIBLE IN THOSE PARTS OF OCEANS AND SEAS WHERE THERE ARE NO ACTIVE EARTHQUAKE ZONES. MICROSEISMIC OSCILLATIONS ARE TRANSMITTED TO THE OCEAN FLOOR, THAT IS, TO A "FOCAL DEPTH" OF SEISMIC EXCITATION KNOWN WITH A HIGH ACCURACY. THE LARGE NETWORK OF SEISMIC STATIONS WHICH HAS BEEN ESTABLISHED DURING RECENT YEARS MAKES IT POSSIBLE TO DETERMINE THE SOURCE OF EXCITATION OF MICROSEISMS BY THE FREQUENCY SYNCHRONISM AND AMPLITUDE DETERMINATION METHOD DESCRIBED IN AN EARLIER STUDY BY ONE OF THE AUTHORS (V. N. TABULEVICH, IZV. AN SSR, SERV. GEOFIZ., NO 11, 1959). THIS ARTICLE DISCUSSES IN DETAIL TWO MICROSEISMIC STORMS GENERATED BY TYPHOONS WHICH PASSED OVER THE SEA OF OKHOTSK, RODE OVER THE KAMCHATKA PENINSULA AND PASSED INTO THE PACIFIC OCEAN (26-27 OCTOBER AND 28-31 OCTOBER 1965). IT IS SHOWN THAT DETERMINATION OF THE EXCITAION SOURCE OF MICROSEISMIC OSCILLATIONS MADE POSSIBLE RELIABLE TRACING OF THE PROPAGATION OF THESE OSCILLATIONS FOR EXTREMELY GREAT DISTANCES. THE SEISMIC STATIONS IRKUTSK AND TIKSI REGISTER MICROSEISMIC SIGNALS FROM THE SEA OF OKHOTSK AND THE PACIFIC OCEAN. THE SEISMIC STATION ANDIZHAN DETECTS FIVE SECOND MICROSEISMS OF THE SEA OF OKHOTSK. PROCESSES ASSOCIATED WITH PASSAGE OF AN ATMOSPHERIC LOW ACROSS THE LAND WERE DETECTED.

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"APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R002203220016-3

CIRC ACCESSION NO--<sup>V10</sup>AP0110453

UNCLASSIFIED

PROCESSING DATE--09OCT70

ABSTRACT/EXTRACT—SEA WAVES ARE A COMPLETELY NECESSARY "INTERMEDIARY" IN  
THE GENERATION OF MICROSEISMS IN ACCORDANCE WITH THE LUNGUEUT HIGGINS  
THEORY. THE METHOD OF FREQUENCY SYNCHRONISM AND AMPLITUDE DETERMINATION  
USED IN WORK ON THE CASPIAN SEA CAN BE USED IN ANY REGION, BEING OF A  
GENERAL NATURE.

FACILITY: IRKUTSK POLYTECHNIC INSTITUTE.

UNCLASSIFIED

APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R002203220016-3"

USSR

UDC 599.32+595.775:591.5+591.9

ROTHSIL'D, Ye. V., KONDRAKHEV, V. E., TABUNINA, T. I., and POSTNIKOV, G. B.,  
All-Union Scientific Research Antiplague Institute "Mikrot", Saratov and Gur'-  
yevskaya Antiplague Station

"Rodents and Fleas in the Enzootic Plague Region Between the Ural and Emba  
Rivers"

Moscow, Zoologicheskiy Zhurnal, Vol 49, No 10, Oct 70, pp 1543-1562

Abstract: The desert located north of the Caspian Sea between the Ural and Emba rivers is an area of enzootic plague. The numerous specimens of fauna caught by the Gur'yevskaya Antiplague Station for bacteriological investigations, together with data available in the literature from 1975 to 1969 were used to systematize the available information and to shed light on the problem. The whole region was divided into small areas and still smaller landscapes according to such ecological factors as geology, surface relief, and type of soil. Data were compiled on the distribution of various rodents and the average number of epizoic fleas living on each type of animal. It was found that high soil salinity and moisture were unfavorable for *Citellus pygmaeus*, *Citellus fulvus*, and *Meriones tamariscinus*, but did not affect the distribution of *Rhombomys*

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USSR

ROTSHIL'D, Ye. V., et al., Zoologicheskiy Zhurnal, Vol 49, No 10, Oct 70,  
pp 1548-1562

optimus. The number of fleas living on Rhombomys optimus and Citellus pygmaeus  
was especially high in landscapes of recently dried up deltas which have  
moderate soil salinity and moisture. These factors promote the proliferation  
of plague-spreading epizoons among rodents.

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"APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R002203220016-3

TITLE--<sup>\*\*</sup> THE EFFECT OF THE ALIGNMENT, LUBRICATION, AND LOCATION OF THE  
SPINDLE BEARINGS OF A COORDINATE BORING MACHINE UPON MACHINING PRECISION  
AUTHOR--MURZAKOV, KH.YE., TABUNSHCHIKOV, M.YA., KLEBANOV, M.K.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, STANKI I INSTRUMENT, NO 3, 1970, PP 10-12  
DATE PUBLISHED-----70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--BORING MACHINE, MACHINE TOOL PLANT, METAL MACHINING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1993/1567

CIRC ACCESSION NO--AP0114155

UNCLASSIFIED

STEP NO--IJR/0121/70/000/003/0010/0012

APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R002203220016-3"

"APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R002203220016-3

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CIRC ACCESSION NO--AP0114155

UNCLASSIFIED

PROCESSING DATE--11SEP70

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN INVESTIGATION OF THREE DESIGN VARIANTS OF THE SPINDLE SUB ASSEMBLY OF A COORDINATE BORING MACHINE WAS MADE AT THE KUYBYSHEV COORDINATE BORING MACHINE PLANT. THE TEST FACILITIES ARE DESCRIBED, AS WELL AS THE EXPERIMENTAL PROCEDURE, AND THE RESULTS OF THE TESTS ARE PRESENTED.

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APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R002203220016-3"

USSR

UDC: 535.373.2

YERMOLAYEV, V. L., GRUZDEV, V. P., and TACHIN, V. S.

"The Role of Electrostatic and Covalent Interactions in Energy  
Transitions in Solutions"

Moscow, Izvestiya AN SSSR --- Seriya Fizicheskaya, vol 36, No 5,  
1972, pp 984-987

**Abstract:** Investigations conducted by the authors for the last few years in the area of radiationless energy transitions in liquid solutions with triple-charged ions of lanthanum have shown that Coulomb interactions strongly affect the velocity constant of energy transition if the donor and acceptor have an un compensated charge and the covalent interactions occur directly between the donor and acceptor or through the links of the structure. In this article they prove the importance of the Coulomb and covalent interactions in energy transitions from the excited REI<sup>1</sup> to the unexcited REI<sup>2</sup>, and from the triplet states of aromatic molecules to the REI, as well as from excited REI to the aromatic molecules, with conversion of the latter to the triplet state. Here, REI represents the rare-earth ion. The authors also find that the radiationless energy transition with the participation of the REI is an effective method for studying coordinate chemical processes in solutions.

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USSR

UDC 535.373.4

YERMOLAYEV, V. L; TACHIN, V. S.

"Quenching Rare Earth Ion Luminescence by Organic Compounds in Liquid Solutions"  
Leningrad, Optika i Spektroskopiya, Vol 29, No 1, 1970, pp 93-99

Abstract: Asserting that the quenching of rare earth ion luminescence has barely been studied heretofore, the authors give an account of their researches into quenching of luminescence in liquid solutions of the nitrate salts of Eu<sup>3+</sup>, and Dy<sup>3+</sup> in acetone by organic compounds whose triplet level is below or near the luminescence level of the rare earth ion. The glow emitted by Eu<sup>3+</sup> salts is also quenched by the addition of molecules with low ionization potentials. The authors investigated both quenching effects for the purpose of understanding their mechanism. They also looked into the effect of rare earth ion complex formation in the quenching process. Details of the experiments are given: the reduction in luminescence output and the shortening of the attenuation time as functions of the quencher concentration were measured, the relative intensity of the luminescence output was determined by the Hitachi MPF-2, and the duration of the luminescence was measured with a device using the pulse lamps ISSh-400 and ISSh-100. The first lamp emits flashes of 4 joules of 1/2

USSR

YERMOLAYEV, V. L., et al., Optika i Spektroskopiya, Vol 29, No 1, 1970, pp 93-99  
energy with a flash duration of 20  $\mu$ s; the second, a strobe lamp, has a flash  
of 1  $\mu$ s duration at a repetition frequency of 100 Hz. The attenuation was  
recorded with the FEU-27 photomultiplier and either the S1-4 or S1-19 oscil-  
lograph. The authors found that the quenching constants obtained varied within  
the limits of  $10^4$  and  $10^6$  M $^{-1}$  sec $^{-1}$ . Two tables of results are given, one of  
quenching constants and the other of quenching velocity constants for various  
quenchers.

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USSR

KOPYLOV, P., MEDVEDEV, E., and TACKOV, A.

"Holography and Television"

Moscow, Radio, No 5, May 1970, pp 15-24

**Abstract:** The authors review the development and explain the basic principles underlying holography. They point to the advantages inherent in hologram as to brightness of transmission which is not possible with focused images either with standard photography or television. The use of holographic methods in television is proposed and the various existing drawbacks enumerated. If the dimensions of holograms can be decreased, then there exists a real possibility of utilizing existing television systems for the transmission of holograms. A practical method for doing this is illustrated where the hologram is broken down into individual, elementary rectangles. These are magnified by lenses until the structure of the transformed hologram is coarse enough to be read by the electron beam of a television camera tube. The hologram may be transmitted through a channel with the aid of a "scanning beam" type television pickup. The raster of the scanning electron beam is projected onto the hologram. This is done with the aid of an optical system forming a microraster on the hologram. The video signal formed on the load of the photoelectron multiplier is amplified and corrected by a preamplifier and a videoamplifier. The section of the hologram transmitted through the channel then appears on the picture tube.

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USSR

KOPYLOV, P., MEDVEDEV, E., and TACHKOV, A., Moscow, Radio, No 5, May 1970, pp 15-  
24

Practical examples of hologram transmission are given; however something was lost  
in each instance. Despite this, the authors express confidence that these short-  
comings will be overcome.

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"APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R002203220016-3

TACHKOV, A.N.  
COUNTRY OF INFO--USSR

SOURCE--ELEKTROSVIAZ", VOL. 24, FEB. 1970, P. 5-10

DATE PUBLISHED-----70  
SUBJECT AREAS--NAVIGATION

TOPIC TAGS--HOLOGRAM, COHERENT LIGHT, TV NETWORK, BANDWIDTH COMPRESSION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1804

CIRC ACCESSION NO--AP0118771  
UNCLASSIFIED

STEP NO--UR/0106/70/024/000/0005/0010

APPROVED FOR RELEASE: 08/09/2001

CIA-RDP86-00513R002203220016-3"

UNCLASSIFIED

PROCESSING DATE--04DEC70

EXTRACT/EXTRACT--(U) GP-0-

ABSTRACT. INVESTIGATION OF DIFFERENT METHODS FOR REDUCING THE VOLUME OF HOLOGRAPHIC INFORMATION TO FACILITATE TRANSMISSION OVER STANDARD TELEVISION CHANNELS. FOR AN IDENTICAL RATE OF TRANSMISSION OF A SINGLE FRAME, THE BANDWIDTH OF THE HOLOGRAPHIC SYSTEM SHOULD BE FOUR TO SEVEN TIMES WIDER THAN A STANDARD TELEVISION CHANNEL. IT IS POSSIBLE TO REDUCE THE VOLUME OF HOLOGRAPHIC INFORMATION BY (1) RECORDING HOLOGRAMS WITH LOW SPATIAL FREQUENCIES, (2) REDUCING THE BANDWIDTH OF THE SPATIAL FREQUENCIES WITH THE AID OF A SCATTERING MEDIUM PLACED IN THE SYSTEM, AND (3) LIMITING THE DIMENSIONS OF THE ANALYZED HOLOGRAPHIC SEGMENT. IT IS SHOWN THAT THE BEST WAY OF REDUCING THE INFORMATION IS BY REMOVING VERTICAL PARALLAX AND BY CONSERVING A LIMITED NUMBER OF ASPECTS IN THE HORIZONTAL DIRECTION. A METHOD IS DESCRIBED FOR TRANSMITTING A SEQUENCE OF IMAGES FOCUSED IN ORDINARY LIGHT, WITH SUBSEQUENT FORMATION OF A HOLOGRAM AT THE RECEIVING END.

UNCLASSIFIED

USSR

UDC 621.397-2

SHMAKOV, P. V., ZHEBEL', B. G., KOPYLOV, P.M., MEDVEDEV, E. V., TACHKOV, A. N.  
"Reproduction of Three-Dimensional by the Use of Coherent Light"

Moscow, Elektrosvyaz'(Electrical Communications), No 2, Feb 70, pp 5-10

Abstract: The authors conclude that: 1) In broadcast holographic television systems a decrease of the information transmitted is possible because of the elimination of vertical parallax and preservation of a limited number of fore-shortenings in the horizontal direction; 2) The method of transmission of a series of images focused in normal light and the forming of them at the receiving end of the holograph, making it possible to perceive depth and to examine the image of three-dimensional objects, is undoubtedly of great interest and merits careful and thorough investigation; and 3) Progress in analysis, transmission, and reproduction of complete holographic information is obviously possible only by using scanning and modulated laser beams. The image of a cannon and a bell photographed with a magnified holograph is shown as it looked before and after transmission on the Moscow-Minsk facsimile channel. The arrangement of the system is shown in several drawings. 5 fig. 21 ref. Submitted 19 May 69.

USSR

UDC 612.45.014.3:612.47.214.232

TADSHIKOV, V. M., and SEMENOV, P. M., Chair of Physics and  
Mitsotology, Tadzhik Medical Institute imeni Abu-Ali Iq-Sin, Dushanbe  
"The Effect of Inhalation of Thoron on Mitosis in the Kidneys"  
Moscow, Byulleten' Eksperimental'noy Biologii i Meditsiny, No. 1,  
1970, pp. 83-85

Abstract: Two hours of inhalation of thoron markedly stimulated  
mitosis in the epithelium of the convoluted tubules of rats.  
After two days the mitotic rate was almost twice as high as in the  
control. Mitosis became normal after eight days.

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USSR

UDC 519.3.110.74.62-50

KHARATISHVILLI, G. L., MACHALDZE, Z. A., MARKOZASHVILLI, N. I., and TADUMADZE,  
T. A.

"Abstract Variational Theory and Its Applications to Optimization Problems  
With Time Lags"

Abstraktnaya Variatsionnaya Teoriya i Yeye Primeneniya k Optimal'nym Zadacham  
s Zapazdyvaniyami (cf. English above), Tbilisi, Metsniyereba Publishing  
House, 1973, 112 pp, Annotation p 4, Introduction pp 5-6

Translation: Annotation -- The work proves the quasiconvexity of filters,  
which makes it possible to obtain from the necessary criticality condition  
the necessary optimality conditions in the form of the maximum principle for  
optimization problems containing time lags, not only in the phase coordinates  
but also in the controls. The optimization problem with time lags subject to  
mixed constraints on phase coordinates and controls is studied separately.  
Proof is given of the necessary optimality condition that permits, in particu-  
lar, solution of bottleneck problems in which the time-lag factor is con-  
sidered. Finally, an algorithm is given and a standard program described

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KHARATISHVILI, G. L., et al., *Abstraktnaya Variatsionnaya Teoriya i Yeye Primeneniya k Optimal'nym Zadacham s Zapazdyvaniyami*, Tbilisi, Metsniyereba Publishing House, 1973, 112 pp

that makes possible calculation of quasilinear optimal time-lag systems.

Excerpt from Introduction -- Extremal problems in linear topological spaces are formulated as problems in the determination of critical filters of a given mapping. Therefore, the criterion for finding the critical filters of mappings yields the corresponding criterion for solving the given extremal problem. To formulate nontrivial criticality criteria it is necessary to apply certain conditions not only to the class of mappings under consideration but also to the class of unknown critical filters. However, these constraints must be broad enough to comprehend the fundamental variational and optimization problems. The mappings under consideration are assumed to be differentiable, and the unknown filters to be quasiconvex; the respective definitions are given in 1.1.

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USSR

KHARATISHVILI, G. L., et al., Abstraktnaya Variatsionnaya Teoriya i Yeye  
Primeneniya k Optimal'nym Zadacham s Zapazdyvaniyami, Tbilisi, Metsniyereba  
Publishing House, 1973, 112 pp

1.2 establishes the quasiconvexity of the filters pertinent to optimization problems with time lags (see 2.1). The differentiable mapping corresponding to these problems is then constructed and the necessary optimality condition derived from the necessary criticality condition in the form of the maximum principle for optimization problems containing time lags, not only in the phase coordinates but also in the controls (see 2.2).

2.3 and 2.4 prove theorems on the differentiability and continuous dependence of the solutions to the differential equations on the right-hand sides that are used in the preceding paragraphs.

Section 3 studies optimization problems containing a time lag in the controls in the presence of mixed constraints on the phase coordinates and controls. Bottleneck problems in particular reduce to these if we consider a time lag in the controls that in real systems, as a rule, is different from

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USSR

KHARATISHVILI, G. L., et al., Abstraktnaya Variatsionnaya Teoriya i Yeye Primeneniya k Optimal'nym Zadacham s Zapazdyvaniyami, Tbilisi, Metsniyereba Publishing House, 1973, 112 pp

zero and plays an important role (see R. BELLMAN, Dinamicheskoye Programmirovaniye [Dynamic Programming], Foreign Literature Press, 1960 [12]). The principal result of the section is the necessary optimality condition, given in the form of a maximum principle, proof of which is effected by the local cross-section method suggested by V. G. BOLTYANSKIY in Matematicheskiye Metody Optimal'nogo Upravleniya (Mathematical Methods of Optimal Control), Nauka Publishing House, 1969 [13]. The conclusion of the section gives an application of the maximum principle to bottleneck problems.

The concluding Section 4 is devoted to the method of numerical calculation of linear time-optimal systems containing time lags in both the controls and the phase coordinates. Substantiation of the computational algorithm is given, as well as a brief description of the standard program compiled on the basis thereof, which is used to calculate several test examples on a BESM-4 electronic computer. Results of the calculation are given in a table.  
4/4

USSR

UDC 632.955

TADZHIBAYEV, T., and SVESENNIKOVA, N. M., Scientific Research Institute of Plant Protection, Tashkent, and All-Union Institute of Plant Protection

"Application of Nematocides Against the Gall-Forming Nematode Meloidogyne sp. on Kenaf Plants"

Moscow, Khimiya v Sel'skom Khozyaystve, Vol 9, No 5, 1971, pp 34-35

Abstract: A nematode Meloidogyne sp. causes considerable damage to the valuable crop of the bast plant kenaf (ambary, Deccan hemp - Hibiscus cannabinus) in Tashkent Oblast'. This nematode forms galls on the roots of the kenaf plants, inhibiting the growth of the plants and reducing the yield by more than 20%. The USSR nematocides carbathion (Na methylthiocarbamate), DDB (dichloroisobutylene 30, dichloroisobutane 40%), nemagon, and thiazon, on being introduced into the soil before the sowing of kenaf, proved effective in the control of the gall-forming nematode.

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## Organophosphorous Compounds

UDC 543.847

USSR

MAKSUDOV, A. M., TADZHIBAYEV, YU., and AKRAMOV, S. T., Order of the Labor  
Red Banner Institute of the Chemistry of Plant Substances, Academy of  
Sciences Uzbek, SSR

"A Colorimetric Method for the Determination of Phosphorus in Organophosphorus  
Compounds"

Tashkent, Uzbekskiy Khimicheskiy Zhurnal, Vol 17, No 1, 1973, pp 16-18

**Abstract:** The following method for the determination of P in organophosphorus compounds was developed. The substance (9-10 mg) was oxidized by heating it in a test tube with 0.5 ml 10 N  $H_2SO_4$  and a few drops of concentrated  $HNO_3$ . On completed oxidation the contents of the test tube were heated to eliminate excess  $HNO_3$ . The contents were diluted with distilled  $H_2O$ , whereupon the solution was neutralized with a 5% KOH solution and brought to 100 ml. One ml. of the solution was combined with 2 ml. of a solution prepared by reducing 5 ml of an ammonium molybdate solution in 10 N  $H_2SO_4$  (5 g. ammonium molybdate in 50 ml solution) on addition of 35 ml  $H_2O$  with 1/2

USSR

MAKSUDOV, A. M., et al., Uzbekskiy Khimicheskiy Zhurnal, Vol 17, No 1, 1973,  
pp 16-18

2.5 g.  $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$  and diluting to 50 ml. The amount of P was determined by measuring the optical density on a photoelectric colorimeter with a red filter. A standard curve was used that was obtained by carrying out determinations on solutions prepared by diluting a solution of 0.04394 g.  $\text{KH}_2\text{PO}_4$  in 1 l.  $\text{H}_2\text{O}$ , which contained 0.01 mg P per ml. The relative error in determinations was  $\leq 0.3\%$ . The method is suitable for the determination of P in organophosphorus pesticides.

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TADZHIKHODZHAYEV, G.

Cotton  
growing

ATTRIBUTES OF TURKEZ COTTON INSTITUTE CITED

Article by T. M. Tadzhikhodzayev, Division Chief, Uzbek People's Central Committee and G. T. Tadzhikhodzayev, Member, Central Committee of Uzbekistan, Tashkent, March 27, 1970, p. 33

The All-Union Scientific Research Institute of Cotton Growing, holder of the Order of Lenin, is well known. Many achievements in science and technology in the cotton-growing industry of the country and abroad have been made there. It was from the Institute's experimental station that the first high-yield varieties of cotton received the fields. The plots that the first high-yield varieties of cotton received the fields. The Institute's members, who in the past had no high-profile titles and who had no thoughts of personal fame, made their Institute famous.

The All-Union Scientific Research Institute of Cotton Growing was the symbol of progressive cotton growing. It was also the symbol of a merging of science and up-to-date practice.

The years passed and the Institute grew. There are now over 350 staff members in it now, of which 150 have the degree of Doctor or Candidate of Science. All the necessary conditions for productive scientific work have been created. The Institute's technical equipment is beyond comparison. The State has set special resources for scientific development. It goes without saying that the Institute's output should have grown in proportion to the State's support of it.

The workers in the field, with the help of science, have achieved great success in growing "white gold". In one of our districts, where the yield of 30-40 quintals of cotton per hectare is the norm, we have obtained quite a number of so-called low-yield regions. It is the civic duty of the scientist to research thoroughly all the problems connected with obtaining high yield in only 10-20 quintals per hectare. This is the task of the Institute. We must not forget that the cotton-growing industry of the country is the basis of the economy. To raise their productivity to the hundreds of thousands of hectares, to make their production of tone more cotton, republic average would mean to bring in many thousands of tons more cotton. That this is a task of paramount importance for a leading institute!

Ref. Code: UR 0219

Acc. Nr.: AP0031629

PRIMARY SOURCE: Byulleten' Eksperimental'noy Biologii i  
Meditiny, 1970, Vol 69, Nr 1, pp 83 -85

THE EFFECT OF THORON INHALATION ON THE MITOTIC ACTIVITY  
IN THE KIDNEYS

M. M. Tadzhikov, F. Kh. Sharipov

Tadzhik Medical Institute

Experiments were conducted on albino rats weighing 200 g each to study the effect produced by inspiration of the aero-thoron mixture on the mitotic activity in the kidneys. Separate content of ThB and ThC was determined by measuring the serial  $\gamma$ -activity. After a 2-hour long inhalation of the air with thoron concentration therein reaching  $25 \cdot 10^{-3}$  curie the absorbed radiation dose given to the rat's kidneys through the Th (C+C)  $\alpha$ -radiation comprised 26.6 ber. Such a single dose causes reversible stimulation of mitotic activity in the epithelium of convoluted tubules of the cortical and collecting tubules of the medullary substance.

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REEL/FRAME

13691756

UDC 632.95

USSR

ABDURASULEVA, A. R., AKHMEDOV, K. N., YUSUPOV, A., and TADZHIMUKHAMEDOV,  
Kh. S., Tashkent University

"Synthesis of Benzylphenols or Benzylresorcinols and Their Methyl Ethers"

USSR Author's Certificate No 327150, filed 28 May 70, published 16 Mar 72,  
(from Referativnyy Zhurnal -- Khimiya, Svodnyy Tom (I, L-S), No 1(II),  
1973, Abstract No 1N480P by T. A. Belyayeva)

Translation: Benzylphenols, benzylresorcinols and their methyl ethers which can be used as bactericides, fungicides, or antihelminths, are synthesized from phenols and resorcinols in the reaction with PhCH<sub>2</sub>Cl during heating in the presence of FeCl<sub>3</sub>·12H<sub>2</sub>O. Example: A mixture consisting of 23 g PhOH, 6.33 g PhCH<sub>2</sub>Cl and 0.0076 g FeCl<sub>3</sub>·12H<sub>2</sub>O is heated at 100-110°C for 20 min., excess of PhOH is removed by distillation at 10-15 mm pressure, the residue is redistilled, and fractions are collected at 135-142°C/2. The resulting 8 g mixture contains 58% o-PhCH<sub>2</sub>C<sub>6</sub>H<sub>4</sub>OH, b.p. 130-131°C/1, and 42% p-PhCH<sub>2</sub>C<sub>6</sub>H<sub>4</sub>OH, m.p. 83-84°C (CCl<sub>4</sub>). In a similar way another mixture is prepared, b.p. 140-145°C/2, consisting of 44.6% o-PhCH<sub>2</sub>C<sub>6</sub>H<sub>4</sub>OMe, m.p. 30-31°C (diluted alcohol) and 55.4% p-PhCH<sub>2</sub>C<sub>6</sub>H<sub>4</sub>OMe, b.p. 154-155°C/4. Chromatographic analysis (Al<sub>2</sub>O<sub>3</sub>) showed the presence of: 2-benzylresorcinol,

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USSR

ABDURASULEVA, A. R., et al., USSR Author's Certificate No 327150, filed  
28 May 70, published 16 Mar 72

m.p. 59°C (benzene), 4-benzylresorcinol, m.p. 78°C (benzene). From 15.5 g resorcinol methyl ether, 3.16 g PhCH<sub>2</sub>Cl and 0.0054 g FeCl<sub>3</sub>·12H<sub>2</sub>O 4.9 g of mixture is obtained, b.p. 157-160°C/2, n<sup>20</sup>D 1.5923, containing 21% 2-PhCH<sub>2</sub>-3-MeOC<sub>6</sub>H<sub>3</sub>OH, m.p. 77°C (hexane), 36% 4-PhCH<sub>2</sub>-3-MeOC<sub>6</sub>H<sub>3</sub>OH, m.p. 51°C (hexane), 43% 6-PhCH<sub>2</sub>-3MeOC<sub>6</sub>H<sub>3</sub>OH, m.p. 43°C. A heating of a mixture consisting of 27.6 g dimethyl ether of resorcin, 2.53 g PhCH<sub>2</sub>Cl and 0.052 g FeCl<sub>3</sub>·12H<sub>2</sub>O at 110-130°C for 30 min. yields 4.2 of substance, b.p. 146-147°C/2, n<sup>20</sup>D 1.5763, which contains according to gas-liquid chromatography 27% 2-PhCH<sub>2</sub>-1,3-(MeO)<sub>2</sub>C<sub>6</sub>H<sub>3</sub> and 73% 4-PhCH<sub>2</sub>-1,3-(MeO)<sub>2</sub>C<sub>6</sub>H<sub>3</sub>.

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VMC 612.014+612.11

USSR

TADZHIVEV, K. T., BRAUN, A. A., and SHARIPOV, F. Kh., Tadzhik State Medical Institute imeni Abusali Ibn-Sino

"Effect of High Altitude on Animal Reactivity"

Dushambe, Izvestiya Akademii Nauk Tadzhikskoy SSR, No 4, 1972, pp 81-86

Abstract: The survival time, weight, and peripheral blood were studied in rats subjected to whole-body X-irradiation (400 r) at various times after being brought to an altitude 3,379 m above sea level. The control animals were irradiated in the city of Dushambe, 820 m above sea level. The mortality rate was higher in the mountains than in the valley, but the longer the animals remained in the mountains prior to irradiation the lower the mortality rate afterward. The weight loss after irradiation was more pronounced in the mountains than in the valley, the amount being inversely related to the length of the adaptation period. Changes in the composition of peripheral blood after X-irradiation of rats not adapted to the altitude factor were of the same nature as in the animals irradiated with the same dose in the valley, but they were somewhat more pronounced. A month after irradiation the number of erythrocytes, thrombocytes, and leukocytes was much higher in the adapted rats than in the unadapted animals.

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UDC 577.16:576.314.612.12

USSR

TOPSKY, V. M., ROZANOV, A. Ya., EKKER, B. Z., Biochemistry Department of  
Odessa University imeni I. I. Mechnikov

"Effect of Vitamins on Erythrocyte Permeability for Nicotinate-C<sup>14</sup> under the  
Effect of Acceleration on the Organism"

Kiev, Ukrains'kiy Biokhimichniy Zhurnal, Vol 44, No 4, 1972, pp 509-514

Abstract: In experiments in vitro a study was made of the characteristic features of the absorption and binding of nicotinic acid tagged with C<sup>14</sup>(NA-C<sup>14</sup>) by the blood cells of rats under supergravitation conditions. The effect on these processes of certain other functionally bound vitamins was also determined. It was established that riboflavin and pantothenate have no effect on the intensity of the NA-C<sup>14</sup> absorption by erythrocytes at the same time as thiamine and lipoate promote it. Under other equal conditions, the erythrocytes of the experimental animals absorb a larger amount of NA-C<sup>14</sup> than the control animals, and they lose it faster during repeated lavages. This indicates an increase in the permeability of the biological membranes under the effect of supergravitation. The presence of individual vitamins in the incubation medium not only does not prevent the loss of NA-C<sup>14</sup> by the erythrocytes of the experimental

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- 55 -

USSR

TOTSKIY, V. M., et al., Ukrains'kiy Biokhimichniy Zhurnal, Vol. 44, No 4,  
1972, pp 509-514

animals with subsequent lavages, but it even promotes an increase in the losses. The complex application of the investigated vitamins has no effect on the NA-C<sup>14</sup> absorption by the erythrocytes; however, it has a positive effect on the mechanisms promoting retention of nicotinic acid and its metabolites in the blood cells.

2/2

UDC 617-001.36-036.1:551.585.7

USSR

TADZHILYEV, K. T., and RAKHIMOV, S. I., Tadzhik Medical Institute, Dushanbe  
"Peculiarities of the Course of Traumatic Shock Under Alpine Conditions"  
Moscow, Khirurgiya, No 4, 1972, pp 3-7

Abstract: A study of 77 patients in different hospitals located in the Pamir mountains (approximate elevation 3,600 m) and of an equal number of patients in Dushanbe hospitals (800 m elevation) showed that 74 patients in the Pamirs survived traumatic shock (loss of limbs, different fractures, hemorrhages), as opposed to 65 in Dushanbe City, in spite of the late hospitalization, prolonged transportation, and inadequate medical treatment. This is attributed to the development of nonspecific resistance to hypoxia at high altitudes, and to the development of nonspecific resistance to traumatic shock and loss of blood. This was verified in experiments with dogs which showed that 84% of dogs acclimatized to high altitudes survived severe shock, while 90% of nonacclimatized dogs perished under identical conditions in the Pamir mountains. Among control dogs in Dushanbe, the survival percentage reached only 39%. Traumatic shock under alpine conditions was accompanied in acclimatized dogs by a sudden decrease of arterial blood pressure (to  $45.0 \pm 0.9$  mm) and an increase in venous blood pressure (from 111.0 to  $190 \pm 2.8$  mm). The latter condition is considered

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USSR

TADZHIYEV, K. T., and RAKHIMOV, S. I., Khirurgiya, No 4, 1972, pp 3-7  
to be dominant under high altitude conditions. Data regarding the concentration of CO<sub>2</sub> and of oxygen in the arterial and venous blood before and after traumatic shock are given, along with the respiration rates of dogs.

2/2

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USSR

TADZHIEV, Sh. K. and RAKHRAMOV, S., Chair of Propedeutics of Children's Diseases,  
Tashkent Medical Institute and Uzbek Scientific Research Institute of Pediatrics

"Ant erythrocyte Autoantibodies during Typhoid Fever in Children"

Tashkent, Meditsinskiy Zhurnal Uzbekistana, No 6, 1970, pp 33-34

Abstract: While it is generally believed that the anemia which develops in children with typhoid fever is due to a toxic inhibition of the hematopoietic bone marrow, the possible formation of autoantibodies which destroy circulating erythrocytes was investigated. The study was done on 62 typhoid patients aged 1.5 to 15 years. The presence of ant erythrocyte autoantibodies was analyzed by the method of partial precipitation of the nonprecipitating antigen antibody complex, with the use of chloroform extracts of antigens obtained from O(I)Rh<sub>0</sub> blood donors. The tests were done at three different stages of the disease: beginning (3rd-6th day), climax (10th-14th day), and prior to discharge from hospital. The results revealed the presence of ant erythrocyte autoantibodies in 42 children, while the reaction was negative in the other 20 children. At the onset of the disease, the antibody titer was 1:50-1:200, erythrocyte concentration was 3.1-4.6 million per cubic millimeter, and hemoglobin concentration was 54-81%. At the height of the disease, the antibody titer was around 1:800, the erythrocyte count was 2.5-3.9 million, and hemoglobin concentration was 45-66%. Prior to discharge (on the 19th-21st day after

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USSR

TADZHIEV, Sh. K and BAKHRAMOV, S., Meditsinskiy Zhurnal Uzbekistana, No 6, 1970,  
pp 33-34

body temperature returned to normal) the antibody titer decreased to 1:50-1:100, the erythrocyte count increased to 3.35-4.51 million, and hemoglobin concentration rose to 59-76.8%. This correlation between the titer of antierythrocyte autoantibodies and the severity of anemia in children with typhoid fever indicates that these antibodies play a definite role in the pathogenesis of anemia in typhoid fever.

2/2

L/2 018

UNCLASSIFIED PROCESSING DATE--13NOV70

TITLE--INFRARED SPECTROSCOPY OF PHOSPHOLIPIDS IN ANIMAL TISSUES DURING  
MALIGNANT GROWTH -U-

AUTHOR--(04)-TAFELSHTEYN, E.E., PUKHOV, V.A., KOZLOV, YU.P., VLADIMIROV,  
YU.A.

COUNTRY OF INFO--USSR

SOURCE--BIOL. NAUKI 1970, (2), 47-52

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--SARCOMA, PHOSPHOLIPID, IR SPECTRUM, AMIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

STEP NO--UR/0325/70/000/002/0047/0052

PROXY REEL/FRAME--1996/0622

CIRC ACCESSION NO--AP0117848

UNCLASSIFIED

UNCLASSIFIED

PROCESSING DATE--13NOV70

2/2 018  
CIRC ACCESSION NO--AP0117848

ABSTRACT/EXTRACT--(U) GP-0 ABSTRACT. PHOSPHOLIPIDS EXTD. FROM RAT SARCOMA SHOWED A DOUBLING OF THE 1550 CM PRIME NEGATIVE1 IR PEAK HEIGHT AS THE TUMOR REACHED MAX. GROWTH, AFTER WHICH THE PEAK RETURNED ALMOST TO ITS ORIGINAL HEIGHT. PHOSPHOLIPIDS FROM THE LIVER OF THE SAME RATS SHOWED A CORRESPONDING MIN. AT THE SAME STAGE OF TUMOR GROWTH. APPARENTLY AMIDES AND IMIDES ACCUMULATE IN THE SARCOMA PHOSPHOLIPIDS DURING MALIGNANT GROWTH. FACILITY: MOSK. GOS. UNIV. IM. LOMONOSOVA, MOSCOW, USSR.

UNCLASSIFIED

UDC 621.372.061:538.56

USSR

TAFT, V. A., GORELIK, V. Yu., PANOV, T. F.

"Circuit with Two Variable Parameters"

Tr. Mosk. in-ta inzh. zh.-d. transp. (Works of Moscow Institute of Railroad  
Transportation Engineers), 1970, vyp. 330, pp 43-47 (from RZh-Radiotekhnika,  
No 8, Aug 70, Abstract No 8A178)

Translation: This article contains an investigation of the problems of studying  
the stability of a linear electric circuit with periodically varying capacitance  
and inductance. The characteristic equation of the system is derived the roots  
of which determine the stability of the system. The bibliography has one entry.

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UDC 621.372.061:538.56

USSR

TAFT, V. A., KARAUOV, A. N., PANOV, T. Ts.

"Two-Loop Circuit with Variable Capacitances and Inductances"

Tr. Mosk. in-ta inzh. zh.-d. transp. (Works of Moscow Institute of Railroad Transportation Engineers), 1970, vyp. 330, pp 57-66 (from RZh-Radiotekhnika, No 8, Aug 70, Abstract No 8A176)

Translation: This article contains an investigation of the problems of studying a two-loop electric circuit with four variable parameters. The system of equations of the circuit is reduced to canonical form. Expressions are obtained for variable parameters in the form of finite Fourier series. An expression is presented for defining the system (characteristic equation) in finite form. There is one illustration and a two-entry bibliography.

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USSR

T UDC 621.375.8

TATY, V. A., GORELIK, V. Yu., DOLGALOV, V. A., Moscow Institute of Railway Transportation Engineers

"A Converter Which Changes Frequency to an Odd Number of Times"

USSR Author's Certificate No 255371, Filed 24 Jun 68, Published 3 Apr 70 (from  
RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10D306)

Translation: This Author's Certificate introduces a frequency converter which contains a two-tank parametric amplifier formed by output and auxiliary transformers by appropriate connection of their windings. This reduces the dependence of the load current on the load impedance and on the amplitude and frequency of the input signal.

N. S.

1/1

USSR

UDC 669.721.042.6(088.8)

TAGAKIN, A. N., KORZNIKOV, V. M., BELKIN, G. I., ALONTSEV, V. S., PROVODNIKOV, A. A., MAZUROV, G. A., TITAYEV, I. A., PUTINA, O. A., MATSUY, N. V., BOCHKAREV, G. V., NAGIBIN, V. M.

"Method of Processing of Magnesium Ingots"

USSR Author's Certificate No 313908, filed 16/03/70, published 10/11/71,  
(Translated from Referativnyy Zhurnal, Metallurgiya, No 5, 1972, Abstract  
No 5 G248 P by G. Svodtseva).

Translation: A method of processing of Mg ingots including transportation, cooling, mechanical working, washing, etching, drying and covering with a protective layer is proposed. In order to reduce the labor expenditures for the process and process time, the ingots are subjected to forced cooling to 450-100°, mechanically worked during transportation, and washed at 350-100°. This reduces labor consumption, decreases the time of the process, and increases the productivity of labor by 40-80%.

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USSR

UDC 533.697

AMARANTOVA, I. I., SADOVSKIY, V. S., TAGANOV, G. I., SHUSTOV, V. I.

"Experimental Study of Total Pressure Loss in Turning a Supersonic Flow Through a Large Angle in Curved Channels"

Uch. zap. Tsentr. aero-gidrodinam. in-ta (Scientific Notes of the Central Aerohydrodynamics Institute), 1971, Vol. 2, No. 2, pp 11-17 (from RZh-Mekhanika, No 12, Dec 71, Abstract No 12B575)

Translation: The results of an experimental study of velocity fields and total pressures at the output of curved channels of great length are presented. Three channels with circular and rectangular cross sections were investigated. The expansion of the channel with circular cross section was 18 calibers of the internal cross section (the channel expanded slightly along the flow) and was approximately 22 calibers for the plane channel (length relative to height of the input cross section). The flow turned through an angle of 80° in the channel with circular cross section and through 72° in the channels with rectangular cross section. The ratio of the sides in the channel of rectangular cross section was 3.7. The studies were conducted for a flow rate at the input

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USSR

SADOVSKIY, V. S., TAGANOV, G. I., Moscow

"Three-Dimensional Supersonic Flow With Heat Supply and Flow Deflection"

Moscow, IAN SSSR, Mekhanika Zhidkosti i Gaza, No 6, Nov/Dec 70, pp 121-125

Abstract: At high supersonic speeds, the flow per second of the air mass which takes part in creating thrust becomes comparable to the mass deflected beneath the wing. This paper deals with a certain limiting case of combining the processes of thrust and lift. In view of a number of properties of the corresponding three-dimensional flow with heat supply and deflection of the stream acting on the body, the aerodynamic forces are determined from one-dimensional equations of gas dynamics, although finding the shape of the body involves plotting two flows close to axisymmetric.

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1/2 035

UNCLASSIFIED

PROCESSING DATE--04DEC70

TITLE--A MATHEMATICAL MODEL FOR A THEORETICAL STUDY OF THREE DIMENSIONAL  
SEPARATED FLOWS -U-

AUTHOR--TAGANOV, G.I.

COUNTRY OF INFO--USSR

SOURCE--ARCHIWUM MECHANIKI STOSOWANEI, VOL. 22, NO. 2, 1970, P. 193-212

DATE PUBLISHED-----70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--MATHEMATIC MODEL, FLOW FIELD, FLOW RATE, PERTURBATION, DELTA  
WING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY FICHE NO----FD70/605007/E03 STEP NO--P0/0033/T0/022/002/0193/0212

CYRC ACCESSION NO--AP0139900

UNCLASSIFIED

2/2 035

UNCLASSIFIED

PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0139900  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. DESCRIPTION OF A MATHEMATICAL MODEL FOR SIMPLIFYING THE STUDY OF THREE DIMENSIONAL STEADY AND UNSTEADY SEPARATED FLOWS, WHICH ASSIMILATES THE FLOW PERTURBATION INTRODUCED BY THE SEPARATED ZONE AT A GIVEN INSTANT TO A PLANE DOUBLET ON THE BODY SURFACE, THE DOUBLET AXIS BEING TANGENTIAL TO THE BODY SURFACE. EXAMPLES ARE GIVEN OF APPLICATIONS OF THIS MODEL TO THE STUDY OF A SYMMETRICAL SEPARATED FLOW PAST A DELTA WING OF SMALL ASPECT RATIO AT AN ANGLE OF INCIDENCE (SPATIAL SELF SIMILAR PROBLEM), AND A SYMMETRICAL AND ASYMMETRICAL SEPARATED FLOW PAST A FLAT PLATE WHEN THE MOTION IS STARTED FROM REST WITH A CONSTANT VELOCITY (PLANE NONSELF SIMILAR PROBLEM).  
FACILITY: AKADEMIIA NAUK SSSR, VYCHISLITEL'NVI TSENTR. MOSCOW, USSR.

UNCLASSIFIED

EQUIPMENT  
Measuring, Testing, Calibrating

USSR

UDC 551.510.62:539.293

TAGANOV, O. K., PROSKURYAKOV, M. V., KHAR'YUZOV, V. A. and FILIPPOV, O. K.

"The Determination of Optical Constants of Semiconductor Glasses in the Spectral Region 1.1 to 1.6 mm"

Leningrad, Optiko-Mekhanicheskaya Promyshlennost', No 2, Feb 73, pp 62-63

Abstract: A method for experimentally determining the optical constants of semiconductor glasses in the submillimeter region of the spectrum, using a prism at minimum deflection for determining the refraction coefficient, a plane-parallel plate for the absorption coefficient, a goniopspectrophotometer, an optical acoustic detector and a reverse wave lamp is presented. The results obtained make it possible to calculate the absorption coefficient and the refraction. As an example of the use of this method the results of the measurement of a sample of chalcogenite glass are presented.

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USSR

UDC: 535.399

TOROPETS, A. S., TAGANOV, O. K.

"Concerning the Transmission of Light Through a Rough Surface. I"

Leningrad, Optika i Spektroskopiya, Vol 33, No 3, Sep 72, pp 582-585

Abstract: An investigation is made of the passage of monochromatic light through a rough surface. The specimens were plane-parallel glass plates ground on one surface. The transmitted light was made up of a diffuse component and a directional component. A quantitative expression is found for the intensity of the directional component as a function of the wavelength of the incident light and the cosine of the angle of incidence. The results of experiments show that passage of light through a rough surface reveals the wave properties of light with particular clarity. It is noted that the directional component of the transmitted light has been missed in work by other researchers because of the insufficient angular resolution of the instruments used. There can be no doubt that the directional component is diffraction-interference in nature. The mechanisms responsible for its formation in both the diffraction and interference cases will be dealt with in the next paper of this series.

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Optical

USSR

UDC 535.891:621.327

UKHANOV, YE. V., TAGANOV, O. K., FILIPPOV, O. K., Candidate of Sciences

"Gas Discharge Source of Long-Wave IR-Radiation"

Leningrad, Optiko-mekhanicheskaya promyshlennost', No. 7, Jul 71, pp 31-33

**Abstract:** The design of an arc lamp with a metal shell, the internal surface of which is in the form of an ellipsoid of rotation, is described and results of spectral experiments are given. It is shown that the brightness of the long-wave IR-radiation of this tube is three times higher than that of a globar. The brightness of the radiation in the spectral region 50-200  $\mu$  of the gas discharge tube with the metallic shell exceeded the PRK-4 tube and a globar. The increased brightness of this tube is explained by the fact that its design makes it possible to apply windows for the release of radiation that have good transmission in the working region of the spectrum. In this case the window is made of low-pressure polyethylene with a thickness of 2.5 mm. The experiment showed that a window of polymer material can be used for tens of hours and is easily replaced. The fabrication of the tube does not require complex electro-vacuum operations, such as welding electrodes to quartz or glass and it can be

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USSR

URHANOV, YE. V., et al, Optiko-mekhanicheskaya promyshlennost', No. 7, Jul 71,  
pp 31-33

produced in a laboratory shop. It is hoped that with its improved characteristics the tube will find application in long-wave infrared spectral devices and as a weakly selective source for other studies in the far-infrared region.

2/2

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1/2 021 UNCLASSIFIED PROCESSING DATE--11SEP70  
TITLE--ON THE PATHOGENESIS OF PULMONARY EMPHYSEMA -U-

AUTHOR--TAGAY, V.A.

COUNTRY OF INFO--USSR

SOURCE--VRACHEBNOYE DELO, 1970, NR 3, PP 67-70

DATE PUBLISHED-----70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--LUNG, RESPIRATORY SYSTEM DISEASE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1986/0973

STEP NO--UR/0475/70/000/003/0067/0070

CIPC ACCESSION NO--APO102912

UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--11SEP70

CIRC ACCESSION NO--APO102912

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A STUDY IS PRESENTED OF 2615 PRACTICALLY HEALTHY YOUTHS. THREE GROUPS HAVE BEEN SINGLED OUT DEPENDING ON THE STATE OF BRONCHIAL PATENCY. PATIENTS SHOWING DISORDERS OF BRONCHIAL PATENCY BUT WITHOUT SIGNS OF CHRONIC BRONCHITIS ARE ANALYSED. PHARMACOLOGICAL TESTS INDICATE THAT DISTURBANCES OF BRONCHIAL PATENCY IN PERSONS WITHOUT SYMPTOMS OF CHRONIC BRONCHITIS ARE MAINLY CAUSED BY BRONCHIAL SPASM.

UNCLASSIFIED

1/2 010 UNCLASSIFIED PROCESSING DATE--16OCT70  
TITLE--DEVELOPMENT OF RELAY BRANCH OF UNIVERSAL SYSTEM OF ELEMENTS OF  
INDUSTRIAL PNEUMATIC AUTOMATION -U-  
AUTHOR-(04)-BERENOS, T.K., YEFREMOVA, T.K., TAGAYEVSKAYA, A.A., TAL, A.A.

COUNTRY OF INFO--USSR

SOURCE--AVTOMATIKA I TELEMEKHANIKA, 1970, NR 4, PP 176-181

DATE PUBLISHED-----70

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., MECH., INS., CIVIL AND  
MARINE ENGR.

TOPIC TAGS--INDUSTRIAL AUTOMATION, DISCRETE AUTOMATION, PNEUMATIC CONTROL  
SYSTEM

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1996/1731

STEP NO--UR/0103/70/003/004/0176/0181

CIRC ACCESSION NO--AP0113709

UNCLASSIFIED

2/2 010  
CIRC ACCESSION NO--APO118709 UNCLASSIFIED PROCESSING DATE--16OCT70  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THERE IS PRESENTED THE VALIDITY OF  
THE EXPEDIENCY OF USING A JET DIAPHRAGM METHOD OF CONSTRUCTING PNEUMATIC  
DISCRETE SYSTEMS IN THE RELAY BRANCH OF THE UNIVERSAL SYSTEMS.

UNCLASSIFIED

*JAGER, A.A.*  
*Polymer*

THE RHEOLOGY OF POLYMERS  
(Symposium in Moscow)

Editorial by Director of Physical and Mathematical Sciences A. N. Mal'yanov. Moscow: Vsesoyuznaya Akademiya Nauk SSSR, Russian, Vol. 2, No. 8, August 1972, pp. 119-211.

Rheological investigations are being developed in two main directions at the present time: firstly, as a component part of fundamental physicochemical work pursuing the goal of establishment of fundamental correspondences between the molecular structure of a substance and its macroscopic properties and, secondly, as a separate section of the mechanics of continua which is interested in finding connections between the kinematic and dynamic parameters and their application to analysis of concrete technological processes. At the regular (Seventh) symposium on the rheology of polymers, organized by the Institute of Petrochemical Synthesis, Ministry of Oil and Gas Industry of the AS USSR and held on 10-11 April in Moscow, the main attention was given to the first direction of investigation. Participating in the sessions were over 500 persons, including a group of scientists from East Germany, Poland, Czechoslovakia and Bulgaria; about 100 reports were heard. Discussed at the symposium was a broad complex of problems connected with the properties, physical chemistry and mechanics of polymeric materials, study of the molecular nature of relaxation effects in macromolecular chains, and the construction of mechanical models for the quantitative description of the behavior of a polymer under different conditions of deformation with detailed comparison of the mechanical parameters of reliably characterized samples and their viscoelastic properties. Discussed with special interest was the problem of the liquid crystalline state and the influence of the physical structure of the system on its rheological properties.

The symposium was opened with the addresses of greeting of K. A. Andrianov and A. Yu. Ishlinskii who emphasized the

more exhaustive importance of rheological investigations to polymer sciences as a whole and numerous applications of high molecular compounds and compositions based on them for structural purposes. There was heard the survey report of E. V. Vinogradov who sketched contemporary concepts of the connection of the molecular structure and rheological properties of polymers. Systematic investigations of the viscoelastic properties and fluidity of model sparse polymers with different flexibility of the chain, conducted in recent years, have made it possible to quantitatively estimate the role of the length of the molecular chain in manifestations of mechanical properties characteristic of polymeric systems. In particular, the limiting conditions of deformation, when the polymer still preserves fluidity and can be processed in stable conditions, have been established. Another aspect of this problem is connected with the determination of general regularities of the transition from the fluid into the highly elastic state as a function of the intensity of deformation and with finding a correlation between the behavior of the polymer in different states and its structure.

The reports of I. M. Gulyaev, G. M. Vinogradov, I. N. Anufrieva and others were devoted to general problems of polymer physics in connection with study of the processes of viscoelastic and dielectric relaxation in different physical states and evaluation of the correspondence of those processes with the conformational properties of polymeric chains. Also belonging to the same "physical" direction in rheology was the report of S. Ya. Frenkel' on the problem of phase transformations arising as a result of deformation and their influence on the conditions and regime of flow of polymeric systems.

In a number of reports the structure of fluid polymers and the influence of the structure of the system on its rheological properties were discussed. Thus, A. A. Tsvetkov discussed in detail the correspondence of the structure and viscosity of solutions of polymers. The report of S. P. Prikryl and co-authors presented the results of study of the rheological properties of anisotropic solutions of rigid-chain polymers which can form a liquid crystalline phase. Possible models of liquid crystals were examined by L. G. Shal'evich and a hydrodynamic theory of their behavior was proposed by E. L. Abo and R. K. Polozhkin. Structural problems connected with the liquid crystallization were presented in survey form by I. G. Chistyakov, who also applied some concepts to the description of the intermediate and submolecular liquid crystalline order. He examined the report of V. N. Taratko and co-authors.

Also related to problems of polymer physics was the report of A. Z. Lubelski (Poland), who told about new results obtained by him in the theory of polymeric lattices. V. D.

USSR

UDC 621.382.2

BERMAN, L.S., TAGER, A.S.

"Semiconductor Diode In A Regime Of Avalanche Breakdown As A Controlled Reactance"

V sb. Poluprovodn. pribory i ikh primeneniya (Semiconductor Devices And Their Application--Collection Of Works), Issue 24, Moscow, "Sov.radio," 1970, pp 149-156 (from RZh--Elektronika i yeye primeneniye, No 4, April 1971, Abstract No 4B159)

Translation: The possibility is shown of a marked increase of the overlap factor of the capacitance and Q of a semiconductor diode by use of a regime of avalanche breakdown. 4 ill. 3 ref.

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172 021 UNCLASSIFIED PROCESSING DATE--13NOV70  
TITLE--INVESTIGATION OF RESISTANCE OF A PN JUNCTION OF IMPATT DIODES IN  
THE 0, 10 MHZ FREQUENCY RANGE -U-  
AUTHOR-(C3)--AKHONOV, V.L., MELNIKOV, A.I., TAGER, A.S.

COUNTRY OF INFO--USSR

SOURCE--V SB. FIZ. ELEKTRONNO-DYROCHN. PEREKHODOV I POLUPROVOON. Priburov.  
REFERENCE--RZH-ELEKTRONIKA I YEYE PRIMENENIYE, NO 3, MAR 70, ABSTR NO NS  
DATE PUBLISHED----69

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--ELECTRON HOLE, PN JUNCTION, SEMICONDUCTOR DIODE, ELECTRIC  
RESISTANCE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1991/0362

STEP NO--UR/0000/69/000/000/0205/0210

CIRC ACCESSION NO--A00110247

UNCLASSIFIED

2/2 021

UNCLASSIFIED

PROCESSING DATE--13NOV70

CIRC ACCESSION NO--AR0110247

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE RESULTS OF AN EXPERIMENTAL INVESTIGATION OF THE P-N JUNCTION OF GERMANIUM DIFFUSED IMPATT DIODES ARE COMPARED WITH THEORETICAL CONCLUSIONS. IT IS DISCOVERED THAT A LOW FREQUENCIES (SMALLER THAN OR EQUAL TO 1 MHZ), THE RESISTANCE OF THE P-N JUNCTION IS SEVERAL TIMES HIGHER THAN THE CALCULATED MAGNITUDE AND DECREASES WITH AN INCREASE OF FREQUENCY AND CURRENT. IT IS SHOWN THAT THIS EFFECT IS CONNECTED WITH THE HEATING UP OF THE P-N JUNCTION OF THE PASSING CURRENT. A NEW METHOD IS PRESENTED FOR MEASURING THE THERMAL RESISTANCE OF THE DIODES IN QUESTION.

UNCLASSIFIED

USSR

UDC 621.382.2(088.8)

PERLOV, V.M., MARTIROSOV, I.M., TAGER, A.S.

"IMPATT Semiconductor Diode"

USSR Author's Certificate No 245922, Filed 22 Apr 68, Published 11 Dec 69 (from RZh-Elektronika i yeye primeneniye, No 8, August 1970, Abstract No 85148P)

Translation: An IMPATT semiconductor diode with a barrier layer is characterized by the fact that in order to increase the efficiency of a microwave oscillator, the semiconductor structure contains at least two semiconductors (or dielectrics) with different values of the width of the forbidden zone and with a barrier layer located in them. The thickness of the semiconductor (or the dielectric) with a narrow forbidden zone is chosen to be small in comparison with the total width of the barrier layer.

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1/2 022

UNCLASSIFIED

PROCESSING DATE--02OCT70

TITLE--AVALANCHE DRIFT SEMICONDUCTOR DIODE -U-

AUTHOR--(03)--VALDPERLOV, V.M., MARTIROSOV, I.M., TAGER, A.S.

COUNTRY OF INFO--USSR

SOURCE--U.S.S.R. 245922

REFERENCE--MOSCOW, OTKRYTIYA, IZOBRETENIYA, PROMYSHLENNYE OBRAZTSY,  
DATE PUBLISHED-----69

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR., ENERGY CONVERSION  
(NON-PROPELLIVE)

TOPIC TAGS--SEMICONDUCTOR DIODE, AVALANCHE DIODE, MICROWAVE GENERATOR

CONTROLE MARKING--NO RESTRICTIONS

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PROCESSING DATE--02OCT70

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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. 1. AN AVALANCHE DRIFT SEMICONDUCTOR DIODE WITH A BARRIER LAYER DIFFERS IN THAT TO IMPROVE THE EFFICIENCY OF THE MICROWAVE GENERATOR, THE SEMICONDUCTOR STRUCTURE CONTAINS AT LEAST TWO SEMICONDUCTORS (OR DIELECTRICS) WITH DIFFERENT WIDTHS OF THE FORBIDDEN ZONE AND WITH A BARRIER LAYER LOCATED IN THEM. 2. A DIODE AS IN ITEM 1 EXCEPT THAT TO BRING THE VARIABLE VOLTAGE AMPLITUDE IN THE DRIFT SECTIONS CLOSE TO THE AMPLITUDE OF THE TOTAL VARIABLE VOLTAGE, AND THE LATTER, TO THE CONSTANT BIAS, THE THICKNESS OF THE SEMICONDUCTOR (OR DIELECTRIC) WITH A NARROW FORBIDDEN REGION IS MADE SMALL BY COMPARISON WITH THE OVER ALL WIDTH OF THE BARRIER LAYER.

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1/2 030

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PROCESSING DATE--1BSEP70

TITLE--INTERACTION BETWEEN DRIFTING CURRENT CARRIERS AND TRAVELLING  
ELECTRIC FIELD IN THE PRESENCE OF COLLISIONS -U-

AUTHOR-(02)-BIKULOV, I.K., TAGER, A.S.

COUNTRY OF INFO--USSR

SOURCE--RADIOTEKHNIKA I ELEKTRONIKA (USSR), VOL. 14., NO. 11, P. 1977-86  
(1969)

DATE PUBLISHED-----69

SUBJECT AREAS--ELECTRONICS AND ELECTRICAL ENGR.

TOPIC TAGS--TRAVELING WAVE TUBE, TRAVELING WAVE, ELECTRON SCATTERING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED  
PROXY REEL/FRAME--1984/0770

STEP NO--UR/0109/69/014/011/1977/1986

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UNCLASSIFIED

PROCESSING DATE--18SEP70

CIRC ACCESSION NO--AP0055473  
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE EFFECT OF ELECTRON SCATTERING,  
DURING COLLISIONS ON THE MECHANISM OF TWT OPERATION IS STUDIED IN A  
LINEAR QUASIHYDRODYNAMIC APPROXIMATION. THE RESULTS SHOW THAT FOR A  
SMALL SPREAD OF THE THERMAL VELOCITIES, INFREQUENT COLLISIONS ( $V$  SMALLER  
THAN  $2 \Omega\text{MEGA RHO}$ , WHERE  $V$  IS COLLISION FREQUENCY AND  $\Omega\text{MEGA RHO}$  IS PLASMA  
FREQUENCY) REDUCE THE INCREMENT OF THE GROWING WAVE WITHOUT ALTERING THE  
CONVENTIONAL MECHANISM OF THE GAIN IN A TWT. AT FREQUENT COLLISIONS ( $V$   
GREATER THAN  $2 \Omega\text{MEGA RHO}$ ), THE GAIN MECHANISM IN A TWT IS BASED ON THE  
RESONANCE OF RELAXATION OSCILLATIONS IN THE ELECTRON STREAM AND ON FIELD  
OSCILLATIONS OF THE TRAVELLING WAVE. THE LATTER MECHANISM IS LESS  
EFFECTIVE. IN TRAVELLING WAVE SOLID STATE AMPLIFIERS AND, IN  
PARTICULAR, IN AN ACOUSTIC AMPLIFIER, BOTH MECHANISMS OF THE GAIN ARE  
POSSIBLE. THE PROPAGATION CONSTANTS AND THE INITIAL AMPLITUDES OF  
PARTIAL WAVES ARE CALCULATED. LIMITING VALUES ARE DETERMINED FOR THE  
INCREMENT OF THE GROWING WAVE, FOR LARGE CURRENTS ( $\Omega\text{MEGA RHO}$  GREATER  
THAN 1). THE CONTRIBUTIONS OF BACK RADIATION AND OHMIC LOSSES IN THE  
DELAY STRUCTURE TO THE GAIN ARE ESTIMATED.

UNCLASSIFIED

UDC: 621.382.2

USSR

VAL'D-PERLOV, V. M., MARTIROSOV, I. M., TAGER, A. S.

"Avalanche-Drift Semiconductor Diode"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki,  
No 20, 1969, p 51, No 245922

Abstract: 1. An avalanche-drift semiconductor diode with a barrier layer differs in that to improve the efficiency of the microwave generator, the semiconductor structure contains at least two semiconductors (or dielectrics) with different widths of the forbidden zone and with a barrier layer located in them. 2. A diode as in item 1 except that to bring the variable voltage amplitude in the drift sections close to the constant bias, the thickness of the total variable voltage, and the latter, to the constant bias, the thickness of the semiconductor (or dielectric) with a narrow forbidden region is made small by comparison with the over-all width of the barrier layer.

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ACC NR: AP9005572

SOURCE CODE: UR/0109/69/014/001/0104/0110

AUTHOR: Bareysha, L. I.; Mel'nikov, A. I.; Spiricheva, T. V.; Tager, A. S.;  
Fedorova, G. M.

ORG: none

TITLE: Noise generator based on an avalanche-transit diode

SOURCE: Radiotekhnika i elektronika, v. 14, no. 1, 1969, 104-110

TOPIC TAGS: avalanche diode, avalanche transit diode, noise generator

ABSTRACT: A description is given of three versions of a noise generator based on diffused-germanium avalanche-transit diodes. The first of these operates in the 100-3,000-MHz frequency range. It consists of the diode, a two-stage Chebyshev impedance transformer, an shf power output with an attenuator, and an automatic temperature-compensating loop. The minimum level of the generated noise power spectral density of this generator is 30 db. The other two versions of the generator operate in the 2-3 and 6-10-GHz frequency ranges and have output noise power spectral densities of 37-40 and 30 db, respectively. Orig. art. has: 7 figures and 7 formulas. FSB: v. 5, no. 57

SUB CODE: 09 / SUBM DATE: 11Jan68 / CRIG REF: 003 / OTH REF: 001

UDC: 621.317.76

Card 1/1

0188  
1930 4954

UDC 621.382.2

USSR

ARONOV, V. L., MEL'NIKOV, A. I., TAGER, A. S.

"Investigation of Resistance of a P-N Junction of Impatt Diodes in the 0 -- 10  
MHz Frequency Range"

V sb. Fiz. elektronno-dyrochn. perekhodov i poluprovodn. priborov (Zh. fiz. i  
tekhn. poluprovodnikov) (Physics of Electron-Hole Junctions and Semiconductor  
Devices -- Collection of Works [Journal of Physics and Technology of Semicon-  
ductors]), Leningrad, "Nauka," 1969, pp 205-210 (from RZh--Elektronika i yeye  
primeneniye, No 3, Mar 70, Abstract No 3B201)

Translation: The results of an experimental investigation of the p-n junction  
of germanium diffused impatt diodes are compared with theoretical conclusions.  
It is discovered that at low frequencies ( $\leq 1$  MHz), the resistance of the p-n  
junction is several times higher than the calculated magnitude and decreases  
with an increase of frequency and current. It is shown that this effect is  
connected with the heating up of the p-n junction by the passing current. A  
new method is presented for measuring the thermal resistance of the diodes in  
question. 6 ill. 1 table. 9 ref. Summary.

1/1

ACC NR: AP9011273

SOURCE CODE: UR/0109/69/014/003/0510/0515

AUTHOR: Tager, A. S.; Khodnevich, A. D.

ORG: none

TITLE: Avalanche-transit diode oscillators with electrical frequency tuning and multidiode oscillators

SOURCE: Radiotekhnika i elektronika, v. 14, no. 3, 1969, 510-515

TOPIC TAGS: avalanche diode, avalanche transit diode, shf oscillator

ABSTRACT: The electrical frequency tuning characteristics of avalanche-transit diode oscillators were studied. Two methods of tuning the oscillators were considered: varying the avalanche-transit diode current, and varying the voltage across a varicap diode, connected in series with the avalanche-transit diode. In the first case, the slope of the tuning characteristics was 1—1.5 MHz/ma for ratios of the operating current to the characteristic current of the order of 0.3 or less (in the 3-cm waveband). In the second case, a tuning of several tens of percent (~30%) could be achieved; however, the output power was reduced by a magnitude of the order of 5—7 db. To increase the output power, oscillators using a number of avalanche-transit diodes connected in parallel were built and tested. The output power of these oscillators was found to increase proportionally to the number of diodes used. Orig. art. has: 5 figures and 6 formulas. [IV]

SUB CODE: 09/ SUBM DATE: 22Jan68/ ORIG REF: 002/ ATN PRESS: 7050

Card 1/1

UDC: 621.373.5.072.6.001.5

1426 2420

AP0023385 INTERNAT. AEROSPACE ABST. 3/6 ULR 0452

A70-16883

NOISE IN AVALANCHE DIODE OSCILLATORS (SHUMY  
GENERATOROV NA LAVINNO-PROLETNYKH DIODAKH  
(GLPD)).

A. S. Tager, A. D. Khodnevich, and A. M. Tsebiev.

Radioelektronika, vol. 12, Sept. 1969, p. 962-975. 14 refs. In  
Russian.

Results of theoretical and experimental studies of phase,  
frequency, and amplitude fluctuations in avalanche diode oscillators  
at frequencies from 1 kHz to 100 MHz. It is shown that the higher  
noise level of amplitude and frequency fluctuations above 5 kHz is  
caused by intrinsic fluctuations in the diode's avalanche current.  
Since the spectral density of these fluctuations changes with  
frequency, the amplitude component of the noise has a significant  
modulating effect at frequencies from 1 to 100 MHz. Suggested  
methods of reducing the noise levels include the use of a high-Q  
resonator and synchronization with an external quartz-crystal signal.

T.M. J.W.

19631931

USSR

UDC 621.382.233

BERMAN, L. S., TAGER, A. S.

"A Semiconductor Diode in the Avalanche Breakdown Mode as a Controlled Reactance"

Moscow, Poluprovodnikovyye Pribory i ikh Primeneniye, No 24, Izd-vo "Sovetskoye Radio", 1970, pp 149-154

Abstract: It is shown that the capacitance and Q coverage factor of a semiconductor diode can be considerably improved by utilizing the avalanche breakdown mode. As the avalanche current through the diode is increased, its reactance varies over a wide range, going from capacitive to inductive. This appreciably extends the adjustment limits of resonant systems based on these diodes. In addition, use of the Townsend avalanche effect means that the Q of the resonator can be increased by partial compensation of losses in the resonator by the back resistance of the diode. One disadvantage of avalanche reactances is that they have a higher noise level than the conventional varicap. Four figures, bibliography of three titles.

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USSR

UDC 621.382.9

KOBYZEV, V.N., TAGER, A.S.

**"Current Instability And Microwave Emission Of n-CdHgTe"**

Pis'ma v ZhETF (Letters To The Journal Of Experimental And Theoretical Physics),  
1971, 14, No 3, pp 164-168 (from RZh--Elektronika i yeye primeneniye, No 12,  
Dec 1971, Abstract No 12B400)

Translation: High-frequency current instability and microwave emission are detected in the 1.5-5 GHz frequency band in monocrystalline n-Cd<sub>0.25</sub>Hg<sub>0.77</sub>Te. Single crystals of CdHgTe with dimensions 2.5 x 2 x 0.1 mm<sup>3</sup> with an electron concentration of 10<sup>15</sup>-10<sup>16</sup> cm<sup>-3</sup> and a mobility  $\approx 3 \cdot 10^4$  cm<sup>2</sup>/v.sec were used for the investigation. It is shown that the microwave emission appears with voltages of the electrical field  $> 100$  v/cm and current densities of (1 - 2)  $\cdot 10^2$  a/cm<sup>2</sup>, both in magnetic fields with a strength up to 6 kiloersted and without a magnetic field. In regions of the field not exceeding by far the thresholds, the microwave emission is close to coherent and has a characteristic "multimode" [mnogomodovyye] structure. The frequency of the coherent emission depends on the current density, the strength of the magnetic field, the orientation of the specimen, and the pulse duration. It is assumed that an instability of the electron-hole plasma lies at the base of the mechanism of microwave emission in CdHgTe as is also the case of InSb. A. Ye.

1/1

- 91 -

USSR

UDC 669.18-412;621.746.753

PIRKULOV, V. G., TACER, L. P., PRYANISHNIKOV, I. S., FILIPPOV, A. F., and  
KLYUYEV, M. M., Elektrostal' Plant and Moscow Institute of Steel and Alloys

"Producing Charging Ingots From Metal-Abrasives Wastes of Heat-Resistant Alloys"  
Moscow, Stal', No 8, Aug 73, pp 724-725

**Abstract:** The technology of concentrating the wastes from grinding a heat-resistant nickel-base alloy using electrical separators with corona discharge has been developed. The engineering modes were determined that provide the production of rich metallic concentrates with a metal content of almost 90% (mixture of oxidized metallic chip and alumina). The enriched concentrate was remelted in an experimental 50-kg induction furnace on a charging block with a resulting quality that satisfied specified requirements for smelting of heat-resistant alloys. Three figures, four bibliographic references.

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TAGER, S.A.



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TRANSLATION

In Reply Refer to:

FSTC/T-23-2007-72  
DIA Task No. T77023101

Date: 13 March 1973

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N73  
F73

ENGLISH TITLE:

DEVELOPMENT AND INVESTIGATION OF HIGH-TEMPERATURE CONSUMPTION

TO BE USED FOR A SOLID FUEL HIGH GENERATION AND THERMODYNAMIC

ANALYSIS OF COMBUSTION CONDITIONS

5TH International Conference on High Analysis of

Combustion Conditions, April 1971.

AUTHOR: S.A. Tager et al. MC

LANGUAGE: Russian

REQUESTOR: AMOST-Ge. Raff. <sup>Mc.</sup>  
TRANSLATOR: AGSI K-2565  
COUNTRY: USSR

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2539-4-15

**Abstract**

The basic principles of the high-temperature combustion of natural solid fuel are formulated. Various are optimized the scheme of natural cyclone with lower fire discharge, increased size lining of a vertical coal dust with all the high-temperature was adopted. Complete preliminary mixing of dried or already dust-air mixture along the entire cyclone and uniformly distributed the combustion of solid fuel to prevent the formation of high-temperature periphery more penetrating conditions of the combustion chamber. The maximum attainable combustion methods and conditions of natural fuel were estimated. The maximum attainable temperature of 35 percent oxygen yield of 35 percent was burned. Dry coal, up to 48 percent oxygen yield of 35 percent was burned. The combustion test of 1.05 atm. atm and an oxidant oxygen up to 600°C. Air enriched with chamber cross-section of 20 mm<sup>2</sup> was achieved. At a chamber pressure working pressure of 5 atm. atm, the corresponds to a firing level of an industrial combustion chamber or more than 100 megawatts, which is about the temperature of flame at the chamber discharge of 2000°C. The time of the slag was trapped in the chamber was 2000°C, and about 80 percent

(1)

**General Principles.**

The high-temperature combustion of natural solid fuel using high-temperature parameter represents a fundamentally new principle. The general trend in work on building combustion chambers and specific engineering solutions were chosen with allowance for the following principles:

- to attain the highest possible temperature for combustion products;
- to reduce heat loss to the walls within a chamber; no minimum diversion of high-temperature heat to the walls must be ensured. The main means for solving this problem is an extreme intensification of combustion;
- known refractory heat-insulating materials are incapable of long-term service in contact with multicomponent and superheated slag melt. So the walls of a combustion chamber must be provided with hardened slag lining protection;